Impact of Rheumatoid Arthritis on Romosozumab Treatment

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INTRODUCTION:

Inflammatory cytokines such as TNF-alpha have been proposed to cause bone loss via sclerostin in inflammatory diseases such as rheumatoid arthritis (RA). Serum sclerostin levels have been reported to correlate with RA activity, and romosozumab treatment may be less effective in the setting of RA patients. However, we have not seen any reports focusing on RA patients in Romosozumab treatment. We investigated the effect of Romosozumab treatment in RA patients is similar to that in the non-RA group and the influence of the disease.

METHODS:

39 RA and 46 non-RA patients were included in this retrospective, observational and single-center study. All patients were treated with romosozumab and received active vitamin D as adjuvant therapy. All patients were non-Hispanic Asian. The primary outcome measure was the increase in bone mineral density (BMD) at six months and one year of treatment with romosozumab. The efficacy of romosozumab treatment is influenced by prior osteoporosis treatment. Therefore, one-to-one propensity score matching was performed on the patients' pretreatment background and bone mineral density at the start of treatment. Statistical methods included repeated measures analysis of variance for treatment outcomes, and we used the free software R for statistical software. The Ethics Committee of Kurashiki Sweet Hospital approved this study.

RESULTS:

Of the 33 matched RA patients (30 female), 13 (39%) used biologics, mean disease age was 21±12 years, disease activity was DAS28-CRP 1.94±0.7, PSL use was 50%, and mean PSL dose was 2.4 mg/day. Thirty-three patients (30 female) were also selected for the non-RA group. For RA/non-RA, mean baseline age was 73 ± 10 / 80 ± 9 years old ($p<0.01$), mean Body Mass Index was 21 ± 4 / 20 ± 3 kg/m^2 ($p=0.13$), mean serum Albumin level was 3.87 ± 0.5 / 3.85 ± 0.5 g/dl ($p=0.86$), mean serum 25-hydroxyvitamin D level was 13.1 ± 6.9 / 12.2 ± 4.9 ng/ml ($p=0.66$). The lumbar spine bone mineral density was 0.81 ± 0.13 / 0.79 ± 0.15 g/cm ($p=0.51$), and the femoral neck bone mineral density was 0.46 ± 0.07 / 0.43 ± 0.07 g/cm ($p=0.06$). there were no significant differences in background factors other than age. There were no differences in prior osteoporosis treatment in both groups.

The lumbar spine BMD change rate was 7.3/9.7% in the RA group and 8.5/10.7% in the non-RA group at six months/one year after romosozumab treatment. The femoral neck BMD change rate was 1.5/3.4% in the RA group and -0.1/1.9% in the non-RA group at six months/one year after romosozumab treatment, showing no significant time series or interaction effects (figure 1,2).

DISCUSSION AND CONCLUSION:

In patients with RA, TNFα, a key cytokine of inflammation, is said to contribute to the bone loss associated with the systemic inflammatory state through the upward regulation of sclerostin.

It was anticipated that romosozumab treatment would result in lower drug efficacy in RA patients. However, the RA population in this study was comparable to non-RA patients in terms of the effect of romosozumab treatment. The RA patients in this study had a low disease activity. It is expected that the levels of inflammatory cytokines such as TNFα and serum sclerostin are probably controlled at low levels when RA disease is under control, suggesting that the effect of romosozumab is comparable to that in non-RA patients.

Patients with RA with low disease activity were expected to benefit as much as non-RA patients from romosozumab treatment.

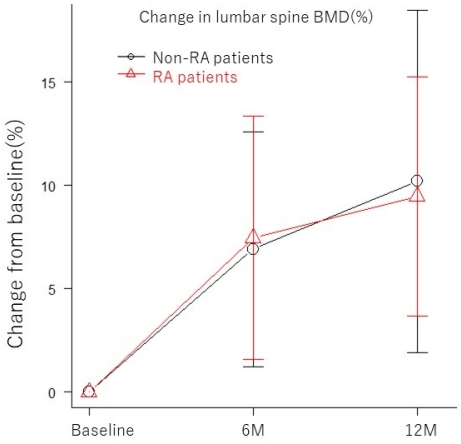

Figure1. mean percentage changes from baseline to 6 and 12 months(M) in bone mineral density(BMD) at the lumbar spine. Bars indicate the mean ± 95% confidence interval.

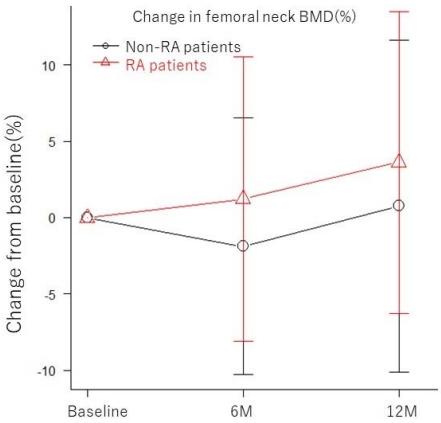

Figure2. mean percentage changes from baseline to 6 and 12 months(M) in bone mineral density(BMD) at the femoral neck. Bars indicate the mean ± 95% confidence interval.